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SQUIRE, SANDERS & DEMPSEY L.L.P.
8000 TOWERS CRESCENT DRIVE
14TH FLOOR
VIENNA, VA 22182-6212

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| KAO, JUTAI | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/736,909 | SALONIDIS ET AL. | |
| | Examiner | Art Unit | |
| | JUTAI KAO | 2416 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *08 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

This office action is a response to the appeal brief filed on 09/08/2008. The previous rejections are withdrawn since the previously cited primary reference was cited with an incorrect US patent number. Previous rejections are therefore withdrawn and the prosecution is re-opened. This action is non-final since no amendments to the claims have ever been made.

1. Applicant's arguments filed 09/08/2008 have been fully considered but they are not persuasive.

Regarding the argument on the 35 USC 101 rejection of claim 7, the applicant asserts that the claim, which claims “a computer program embodied on a computer readable medium” is patentable. However, even though the claimed computer program is embodied on a computer readable medium, the program itself still does not belong to any of the statutory category. The program itself is still not a physical object. Therefore, the 35 USC 101 rejections are maintained.

Regarding the independent claims, the applicant mainly argued the following points: feasibility; allocation adjustments of a flow sharing the link; notification sent to neighboring nodes; and the combinability of the cited prior arts.

Regarding feasibility, the applicant argues that "feasibility" as defined in the "specification" requires that there exist a "conflict-free" schedule. The claim does not include any such definition of the term. In addition, cited prior art, Kondylis, as agreed by the applicant, includes the bandwidth reserved for the flows to be transmitted. By

reserving the bandwidth, there must also be a conflict-free schedule since the bandwidth is “reserved” and therefore also reads on the feasibility defined by the current application.

Regarding allocation adjustments of flow sharing the link, the applicant first argues that the cited prior art, Cousins, does not include “flows sharing a link”. However, as shown in previous actions, Cousins does include flows sharing the single physical link between the two communicating devices, which reads on the claimed limitation of “flow sharing a link" since there are a plurality of logical flows sharing this single physical link. The applicant then argues about the term "adjustment” as being an adjustment made to pre-existing parameters. However, the claim never requires an adjustment to be made to pre-existing parameters. The cited prior arts include adjustments to be made in the initialization of the communication based on the different network condition. Although there may or may not be any adjustments to be made to pre-existing parameters in the case of the cited prior art, it is an adjustment nonetheless.

Regarding the sending of notification to the neighboring nodes, the applicant argues that the cited prior art only includes the broadcasting of the message. However, broadcasting means that the message is sent to all of the nodes, which includes the neighboring nodes. The cited prior art, Galand, also recites “the neighboring Transit Nodes” in column 6, line 24.

Regarding the combinability of the cited prior arts, the applicant argues that Cousins and Galland both disclose wireline system instead of the claimed wireless

system. However, Kondylis teaches a wireless ad hoc network. Although wireless networks are more complicated than wired networks, the basic idea of bandwidth sharing is the same. Therefore, it is obvious to one of the ordinary skill in the art to apply the bandwidth allocation methods used in a wired network in a wireless network.

The applicant then argues the dependent claim rejected using the reference Counterman. Regarding the claim, the applicant first argues that Counterman does not teach bandwidth allocation utilizing QoS guarantees in a wireless ad-hoc network. However, as previously shown, Counterman teaches the use of QoS guarantees in a packet network. Wireless ad-hoc network is also a packet network. And it would have been obvious to use the idea of the QoS management of Counterman's invention in Kondylis' wireless ad-hoc "packet" network.

The applicant further argues that the current invention also teaches the Max Min Fair condition in addition to the QoS guarantee condition. However, the claim limitation only requires at least one of the Max Min Fair condition and a QoS guarantee condition, and Counterman discloses the latter of the two.

### *Claim Rejections - 35 USC § 101*

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 7 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 7 claims a computer program, which is non-statutory. It is suggested to modify the claim so that it claims "A computer readable

medium encoded with a computer program, which when executed, performs..." That is, a physical computer readable medium is statutory since it is a physical object while a software program is not a physical object and therefore is non-statutory.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 1-2, and 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondylis (US 6,665,311) in view of Cousins (US 6,618,385) and Galand (US 6,628,670).

Kondylis discloses a method and apparatus for adaptive bandwidth reservation in wireless ad-hoc networks including the following features.

Regarding claim 1, a method of allocating bandwidth (see "reserve bandwidth" recited in column 6, line 17) in a first node (see "a set of transmitters…reserve bandwidth" recited in column 6, line 16-17) that is operable in an ad hoc wireless network (see "wireless ad-hoc network" in the title) configured to support at least one guaranteed feasible flow allocation (see "adapt the reserved bandwidth according to traffic fluctuation" recited in column 6, line 17-19; that is, guaranteed feasible because it dynamically adapts").

Regarding claim 4, initiating a communication between the first node and the second node (explained below in the rejection of claim 1 using Cousins) in a slotted (see "ad-hoc nodes…timeslot reservation" recited in column 6, line 24-25), ad hoc, wireless network (see "wireless ad-hoc network" in the title).

Regarding claim 6, a network device (see "a set of transmitters…reserve bandwidth" recited in column 6, line 16-17) of allocating bandwidth (see "reserve bandwidth" recited in column 6, line 17) in a first node (see "a set of transmitters…reserve bandwidth" recited in column 6, line 16-17) that is operable in an ad hoc wireless network (see "wireless ad-hoc network" in the title) configured to support at least one guaranteed feasible flow allocation (see "adapt the reserved bandwidth according to traffic fluctuation" recited in column 6, line 17-19; that is, guaranteed feasible because it dynamically adapts").

Regarding claim 7, a computer program embodied on computer-readable media (see "computer product" recited in the abstract), with the computer program configured to allocate bandwidth (see "reserve bandwidth" recited in column 6, line 17) in a first node (see "a set of transmitters…reserve bandwidth" recited in column 6, line 16-17) that is operable in an ad hoc wireless network (see "wireless ad-hoc network" in the title) configured to support at least one guaranteed feasible flow allocation (see "adapt the reserved bandwidth according to traffic fluctuation" recited in column 6, line 17-19; that is, guaranteed feasible because it dynamically adapts").

Regarding claim 8, a network device (see "a set of transmitters…reserve bandwidth" recited in column 6, line 16-17) of allocating bandwidth (see "reserve bandwidth" recited in column 6, line 17) in a first node (see "a set of transmitters…reserve bandwidth" recited in column 6, line 16-17) that is operable in an ad hoc wireless network (see "wireless ad-hoc network" in the title) configured to support at least one guaranteed feasible flow allocation (see "adapt the reserved bandwidth according to traffic fluctuation" recited in column 6, line 17-19; that is, guaranteed feasible because it dynamically adapts").

Kondylis does not disclose the following features: regarding claim 1, the method comprising the steps of: initiating a communication between the first node and a second node in the network that, together, are endpoints of a link, the communication being related to possible bandwidth allocation adjustment of a flow sharing the link; determining, in the first node, a first new bandwidth allocation that approaches a first optimization condition for the flow; communicating with the second node to determine a

mutually-agreed upon optimal bandwidth allocation for the flow; notifying neighbor nodes in the network of the mutually-agreed upon optimal bandwidth allocation when reallocation is needed; and adopting the mutually-agreed upon optimal allocation for the flow when the reallocation is needed; regarding claim 2, re-performing the initiating, determining, communicating, notifying, and adopting steps at a later point in time; regarding claim 5, initiating a communication between the first node and the second node in a network on which a Time Division Multiple Access (TDMA) schedule is implemented; regarding claim 6, a first communication unit configured to initiate a communication between the device and a node in the network that, together, are endpoints of a link in the network, the communication being related to possible bandwidth allocation adjustment of a flow sharing the link; a first processing unit configured to determine a first new bandwidth allocation that approaches a first optimization condition for the flow, wherein the first processing unit is operably connected to the first communication unit; a second communication unit configured to communicate with the node to determine a mutually-agreed upon optimal bandwidth allocation for the flow, wherein the second communication unit is operably connected to the first communication unit; a third communication unit configured to notify neighbor nodes in the network of the mutually-agreed upon optimal bandwidth allocation when reallocation is needed, wherein the third communication unit is operably connected to the first communication unit; and a second processing unit configured to adopt the mutually-agreed upon optimal allocation for the flow when reallocation is needed, wherein the second processing unit is operably connected to the first communication

unit; regarding claim 7, the computer program comprising: a first sub-routine for initiating a communication between the first node and a second node in the network that, together, are endpoints of a link, the communication being related to possible bandwidth allocation adjustment of a flow sharing the link; a second sub-routine for determining, in the first node, a first new bandwidth allocation that approaches a first optimization condition for the flow; a third sub-routine for communicating with the second node to determine a mutually-agreed upon optimal bandwidth allocation for the flow; a fourth sub-routine for notifying neighbor nodes in the network of the mutually-agreed upon optimal bandwidth allocation when reallocation is needed; and a fifth sub-routine for adopting the mutually-agreed upon optimal allocation for the flow when the reallocation is needed; regarding claim 8, initiation means for initiating a communication between the first node and a second node in the network that, together, are endpoints of a link, the communication being related to possible bandwidth allocation adjustment of a flow sharing the link; determination means for determining, in the first node, a first new bandwidth allocation that approaches a first optimization condition for the flow; communication means for communicating with the second node to determine a mutually-agreed upon optimal bandwidth allocation for the flow; notification means for notifying neighbor nodes in the network of the mutually-agreed upon optimal bandwidth allocation when reallocation is needed; and adoption means for adopting the mutually-agreed upon optimal allocation for the flow when the reallocation is needed

Cousins discloses a high performance, high bandwidth, and adaptive local area network communications including the following features.

Regarding claim 1, initiating a communication between (see "two machines…communicate…" recited in column 7, line 40-41) the first node (see "DTE (sender)" recited in column 5, line 8) and a second node ("DCE (receiver)" recited in column 5, line 8-9) in the network (see "two machines in the LAN" recited in column 7, line 40-41) that, together, are endpoints of a link (DTE being the sender end and DCE being the receiver end), the communication being related to possible bandwidth allocation adjustment of a flow sharing the link (see "negotiation session …to determine the best use of the available bandwidth" recited in column 7, line 44-47); determining, in the first node (see "designated DTE…determine the parameters…" recited in column 7, line 15-16) , a first new bandwidth allocation (see "determine…optimized bandwidth, and optimized transfer conditions" recited in column 3, line 44-46) that approaches a first optimization condition for the flow (see "bandwidth…optimized given the condition and quality of the line connection" recited in column 3, line 57-58); communicating with the second node (see "DTE communicates with…DCE regarding the various measurements…to determine the parameters…" recited in column 7, line 11-16) to determine a mutually-agreed upon optimal bandwidth allocation for the flow (see "determine the best use of the available bandwidth…" recited in column 7, line 46-47; also "negotiation further includes reservation of…bandwidth" recited in column 7, line 49-50); and adopting the mutually-agreed upon optimal allocation for the flow when the reallocation is needed (see "These parameters are then utilized…" recited in column 3, line 52-53).

Regarding claim 2, re-performing the initiating, determining, communicating, notifying, and adopting steps at a later point in time (see "network initialization process may continue…ongoing calibration…may also be performed whenever there is a changed condition…" recited in column 6, line 19-26; wherein the initialization process includes all processes described above in the rejection made to claim 1, and the notifying step is disclosed in Galand below, where the notifying step could be incorporated into the initialization process described here).

Regarding claim 5, initiating a communication between the first node and the second node in a network (explained above in the rejection made to claim 1) on which a Time Division Multiple Access (TDMA) schedule is implemented (see "TDMA" recited in column 10, line 45-50).

Regarding claim 6, a first communication unit (see "interface adapter 200 of the designated DTE" recited in column 7, line 11) configured to initiate a communication between (see "two machines…communicate…" recited in column 7, line 40-41) the device (see "DTE (sender)" recited in column 5, line 8) and a node ("DCE (receiver)" recited in column 5, line 8-9) in the network (see "two machines in the LAN" recited in column 7, line 40-41) that, together, are endpoints of a link in the network (DTE being the sender end and DCE being the receiver end), the communication being related to possible bandwidth allocation adjustment of a flow sharing the link (see "negotiation session …to determine the best use of the available bandwidth" recited in column 7, line 44-47; a first processing unit (again, the DTE described above) configured to determine a first new bandwidth allocation (see "determine…optimized bandwidth, and optimized

transfer conditions" recited in column 3, line 44-46) that approaches a first optimization condition for the flow (see "bandwidth…optimized given the condition and quality of the line connection" recited in column 3, line 57-58), wherein the first processing unit is operably connected to the first communication unit (the DTE is connected to the DTE adapter; see Fig. 2 "TO/FROM DTE" connection with the adapter 200); a second communication unit configured (the DTE itself) to communicate with the node (see "DTE communicates with…DCE regarding the various measurements…to determine the parameters…" recited in column 7, line 11-16) to determine a mutually-agreed upon optimal bandwidth allocation for the flow (see "determine the best use of the available bandwidth…" recited in column 7, line 46-47; also "negotiation further includes reservation of…bandwidth" recited in column 7, line 49-50), wherein the second communication unit is operably connected to the first communication unit (the DTE includes both units); and a second processing unit (the DTE itself) configured to adopt the mutually-agreed upon optimal allocation for the flow when the reallocation is needed (see "These parameters are then utilized…" recited in column 3, line 52-53), wherein the second processing unit is operably connected to the first communication unit (the DTE includes both units).

Regarding claim 7, a first sub-routine for initiating a communication between (see "two machines…communicate…" recited in column 7, line 40-41) the first node (see "DTE (sender)" recited in column 5, line 8) and a second node ("DCE (receiver)" recited in column 5, line 8-9) in the network (see "two machines in the LAN" recited in column 7, line 40-41) that, together, are endpoints of a link (DTE being the sender end and DCE

being the receiver end), the communication being related to possible bandwidth allocation adjustment of a flow sharing the link (see "negotiation session …to determine the best use of the available bandwidth" recited in column 7, line 44-47); a second sub-routine for determining, in the first node (see "designated DTE…determine the parameters…" recited in column 7, line 15-16) , a first new bandwidth allocation (see "determine…optimized bandwidth, and optimized transfer conditions" recited in column 3, line 44-46) that approaches a first optimization condition for the flow (see "bandwidth…optimized given the condition and quality of the line connection" recited in column 3, line 57-58); a third sub-routine for communicating with the second node (see "DTE communicates with…DCE regarding the various measurements…to determine the parameters…" recited in column 7, line 11-16) to determine a mutually-agreed upon optimal bandwidth allocation for the flow (see "determine the best use of the available bandwidth…" recited in column 7, line 46-47; also "negotiation further includes reservation of…bandwidth" recited in column 7, line 49-50); and a fifth sub-routine for adopting the mutually-agreed upon optimal allocation for the flow when the reallocation is needed (see "These parameters are then utilized…" recited in column 3, line 52-53).

Regarding claim 8, initiation means (see "interface adapter 200 of the designated DTE" recited in column 7, line 11) for initiating a communication between (see "two machines…communicate…" recited in column 7, line 40-41) the first node (see "DTE (sender)" recited in column 5, line 8) and a second node ("DCE (receiver)" recited in column 5, line 8-9) in the network (see "two machines in the LAN" recited in column 7, line 40-41) that, together, are endpoints of a link (DTE being the sender end and DCE

being the receiver end), the communication being related to possible bandwidth allocation adjustment of a flow sharing the link (see "negotiation session …to determine the best use of the available bandwidth" recited in column 7, line 44-47); determination means (the DTE itself) for determining, in the first node (see "designated DTE…determine the parameters…" recited in column 7, line 15-16), a first new bandwidth allocation (see "determine…optimized bandwidth, and optimized transfer conditions" recited in column 3, line 44-46) that approaches a first optimization condition for the flow (see "bandwidth…optimized given the condition and quality of the line connection" recited in column 3, line 57-58); communication means (the DTE itself) for communicating with the second node (see "DTE communicates with…DCE regarding the various measurements…to determine the parameters…" recited in column 7, line 11-16) to determine a mutually-agreed upon optimal bandwidth allocation for the flow (see "determine the best use of the available bandwidth…" recited in column 7, line 46-47; also "negotiation further includes reservation of…bandwidth" recited in column 7, line 49-50); and the adoption means for adopting the mutually-agreed upon optimal allocation for the flow when the reallocation is needed (see "These parameters are then utilized…" recited in column 3, line 52-53).

Galand discloses a method and system for sharing reserved bandwidth between several dependent connections in high-speed packet switching networks including the following features.

Regarding claim 1, notifying neighbor nodes in the network of the mutually agreed upon optimal bandwidth allocation when reallocation is needed (see "in case of

call acceptance, the modified link metrics…sent to…each node in the network by means of a broadcast algorithm).

Regarding claim 6, a third communication unit (see "origin (access) node 100" recited in column 10, line 53; which is equivalent to the DTE in Cousins) configured to notify neighbor nodes in the network of the mutually-agreed upon optimal bandwidth allocation when reallocation is needed (see "in case of call acceptance, the modified link metrics…sent to…each node in the network by means of a broadcast algorithm), wherein the third communication unit is operably connected to the first communication unit (the origin node/DTE includes both units).

Regarding claim 7, a fourth sub-routine for notifying neighbor nodes in the network of the mutually agreed upon optimal bandwidth allocation when reallocation is needed (see "in case of call acceptance, the modified link metrics…sent to…each node in the network by means of a broadcast algorithm).

Regarding claim 8, notification means for notifying neighbor nodes in the network of the mutually agreed upon optimal bandwidth allocation when reallocation is needed (see "in case of call acceptance, the modified link metrics…sent to…each node in the network by means of a broadcast algorithm).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Kondylis by using the features, as taught by Cousins and Galand, in order to provide efficient use of bandwidth between two nodes; and in order to provide intermediate nodes with essential information regarding bandwidths to be allocated to the particular link.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondylis (US 6,621,805) in view of Cousins (US 6,618,385) and Galand (US 6,628,670) as applied to claim 1 above, and further in view of Counterman (US 6,724,727).

Kondylis in view of Cousins and Galand discloses the claimed limitations described above. Kondylis in view of Cousins and Galand do no disclose the following features: regarding claim 3, determining, in a first node, a first new bandwidth allocation that approaches at least one of a Max Min Fair condition and a Quality of Service guarantee condition.

Counterman discloses a policy-based forward error correction in packet networks including the following features.

Regarding claim 3, determining, in a first node, a first new bandwidth allocation (explained above in the rejection made to claim 1 using Cousins) that approaches at least one of a Max Min Fair condition and a Quality of Service guarantee condition (see "allocates bandwidth…in order to satisfy the QoS objectives…" recited in column 1, line 63-65).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Kondylis, Cousins and Galand by using the feature, as taught by Counterman, in order to enhance the service quality to the end users.

## *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUTAI KAO whose telephone number is (571)272-9719. The examiner can normally be reached on Monday ~Friday 7:30 AM ~5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on (571)272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ju-Tai Kao

/Ju-Tai Kao/
Acting Examiner of Art Unit 2416

/Kwang B. Yao/

Supervisory Patent Examiner, Art Unit 2416